

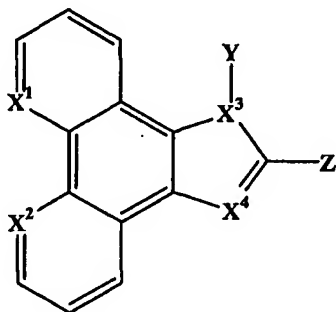
Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

WE CLAIM:

1. (cancelled)
2. (currently amended) A compound as claimed in claim ~~[[1]]~~ 5 wherein said compound is photoluminescent or electroluminescent.
3. (cancelled)
4. (cancelled)
5. (currently amended) ~~A compound as claimed in claim 1~~ A compound having a formula (1)



(1)

wherein X¹, X², X³ and X⁴ are nitrogen;

Y is selected from the group consisting of hydrogen, a substituted or unsubstituted aryl group, and a substituted or unsubstituted aliphatic group having 1-24 carbon atoms which may be straight, branched or cyclic;

Z is a substituted or unsubstituted aryl moiety selected from the group consisting of

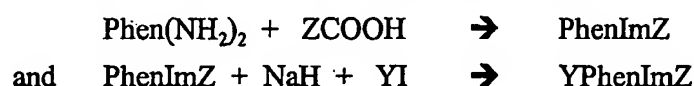
phenyl, biphenyl, naphthyl, anthryl, phenanthryl, pyrenyl, pyridyl, bipyridyl, indyl, and quinolinyl; and

wherein a said substituent is selected from the group consisting of an aryl group, an alkoxy group, a hydroxy group, a halo group, a nitro group, a nitrile group, -CF₃, and an aliphatic group having 1-24 carbon atoms which may be straight, branched or cyclic.

6. (currently amended) A compound as claimed in claim [[1]] 5 wherein Y is an aliphatic group having 1-12 carbon atoms.

7. (currently amended) A compound as claimed in claim [[1]] 5 wherein Y is an aliphatic group having 1-4 carbon atoms.

8. (currently amended) A method of synthesizing a compound as claimed in claim [[1]] 5 comprising at least one step selected from the group consisting of:



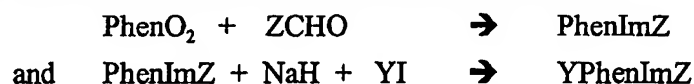
wherein PhenIm is imidazo[4,5-f]-1,10]phenanthroline;

Y is selected from the group consisting of hydrogen, substituted or unsubstituted aryl group, and substituted or unsubstituted aliphatic group having 1-24 carbon atoms which may be straight, branched or cyclic;

Z is selected from the group consisting of phenyl, biphenyl, naphthyl, anthryl, phenanthryl, pyrenyl,[[,]] pyridyl, bipyridyl, indyl, and quinolinyl; and

wherein a said substituent is selected from the group consisting of an aryl group, an alkoxy group, a hydroxy group, a halo group, ~~an amino group~~, a nitro group, a nitrile group, -CF₃, and an aliphatic group having 1-24 carbon atoms which may be straight, branched or cyclic.

9. (currently amended) A method of synthesizing a compound as claimed in claim [[1]] 5 comprising at least one step selected from the group consisting of:



wherein PhenIm is imidazo[4,5-f]-1,10]phenanthroline;

Y is selected from the group consisting of hydrogen, substituted or unsubstituted aryl group, and substituted or unsubstituted aliphatic group having 1-24 carbon atoms which may be straight, branched or cyclic;

Z is selected from the group consisting of phenyl, biphenyl, naphthyl, anthryl, phenanthryl, and pyrenyl; and

wherein a said substituent is selected from the group consisting of an aryl group, an alkoxy group, a hydroxy group, a halo group, ~~an amino group~~, a nitro group, a nitrile group, -CF₃, and an aliphatic group having 1-24 carbon atoms which may be straight, branched or cyclic.

10. (currently amended) A photoluminescent or electroluminescent compound having a formula selected from the group consisting of 2-(9-anthryl)imidazo[4,5-f]-1,10]phenanthroline PhenImAn (2), 1-methyl-2-(9-anthryl)imidazo[4,5-f]-1,10]phenanthroline MePhenImAn (3), 2-(2-pyridyl)imidazo[4,5-f]-[1,10]-phenanthroline PhenImPy (4), and 1-methyl-2-(2-pyridyl)imidazo[4,5-f]-[1,10]-phenanthroline MePhenImPy (5).

11. (currently amended) A composition comprising a compound as claimed in claim [[1]] 5, an organic polymer and a solvent.

12. (original) A composition comprising a photoluminescent or electroluminescent compound as claimed in claim 2, an organic polymer and a solvent.

13. (original) A photoluminescent product or an electroluminescent product comprising a compound as claimed in claim 2 or claim 10.

14. (original) The product of claim 13 which is a flat panel display device.

15. (original) The product of claim 13 which is a luminescent probe.

16. (cancelled)

17. (original) An electroluminescent device for use with an applied voltage, comprising:
a first electrode,
an emitter which is an electroluminescent compound as claimed in claim 2 or claim 10,
and
a second, transparent electrode,
wherein voltage is applied to the two electrodes to produce an electric field across the emitter so that the emitter electroluminesces.

18. (original) An electroluminescent device for use with an applied voltage, comprising:
a first electrode,
a second, transparent electrode,
an electron transport layer adjacent the first electrode,
a hole transport layer adjacent the second electrode, and
an emitter which is an electroluminescent compound as claimed in claim 2 or claim 10
interposed between the electron transport layer and the hole transport layer,
wherein voltage is applied to the two electrodes to produce an electric field across the
emitter so that the emitter electroluminesces.
19. (original) 2-(9-anthryl)imidazo[4,5-f]-[1,10]phenanthroline (2).
20. (original) 1-methyl-2-(9-anthryl)imidazo[4,5-f]-[1,10]phenanthroline (3).
21. (original) 2-(2-pyridyl)imidazo[4,5-f]-[1,10]phenanthroline (4).
22. (original) 1-methyl-2-(2-pyridyl)imidazo[4,5-f]-[1,10]phenanthroline (5).
- 23-31. (cancelled)
32. (currently amended) A photocopier ~~employing the method of claim 26 or 29~~ comprising a compound of claim 5 or 40, wherein photons strike said compound and charge separation occurs in said compound.
33. (currently amended) A photovoltaic device ~~employing the method of claim 26 or 29~~ comprising a compound of claim 5 or 40, wherein photons strike said compound and charge separation occurs in said compound.
34. (currently amended) A photoreceptor ~~employing the method of claim 26 or 29~~ comprising a compound of claim 5 or 40, wherein photons strike said compound and charge separation occurs in said compound.
35. (currently amended) A solar cell ~~employing the method of claim 26 or 29~~ comprising a compound of claim 5 or 40, wherein photons strike said compound and charge separation occurs

in said compound.

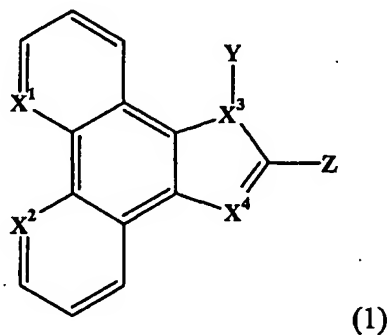
36. (currently amended) A semiconductor employing the method of claim 26 or 29 comprising a compound of claim 5 or 40, wherein photons strike said compound and charge separation occurs in said compound.

37. (original) A molecular switch comprising a compound as claimed in claim 2 that is capable of existing in more than one luminescent state, wherein acid, base, and/or incident light produces a change in the luminescent state of said compound.

38. (original) The molecular switch of claim 37 wherein said compound is 2-(9-anthryl)imidazo[4,5-f]-[1,10]phenanthroline (2) or 2-(2-pyridyl)imidazo[4,5-f]-[1,10]phenanthroline (4).

39. (original) A circuit comprising a molecular switch as claimed in claim 37 or 38.

40. (new) A compound having a formula (1)



wherein X^1 , X^2 , X^3 and X^4 are nitrogen;

Y is selected from the group consisting of hydrogen, a substituted or unsubstituted aryl group, and a substituted or unsubstituted aliphatic group having 1-24 carbon atoms which may be straight, branched or cyclic;

Z is a substituted or unsubstituted aryl moiety selected from the group consisting of phenyl, biphenyl, naphthyl, anthryl, phenanthryl, pyrenyl, pyridyl, bipyridyl, indyl, and quinolinyl; and

wherein a said substituent is not further substituted and is selected from the group consisting of an aryl group, an alkoxy group, a hydroxy group, a halo group, an amino group, a nitro group, a nitrile group, -CF₃ and an aliphatic group having 1-24 carbon atoms which may be straight, branched or cyclic.

41. (new) A compound as claimed in claim 40, wherein said compound is photoluminescent or electroluminescent.

42. (new) A compound as claimed in claim 40, wherein Y is an aliphatic group having 1-12 carbon atoms.

43. (new) A compound as claimed in claim 40, wherein Y is an aliphatic group having 1-4 carbon atoms.

44. (new) A composition comprising a compound as claimed in claim 40, an organic polymer and a solvent.

45. (new) A composition comprising a photoluminescent or electroluminescent compound as claimed in claim 41, an organic polymer and a solvent.

46. (new) A photoluminescent product or an electroluminescent product comprising a compound as claimed in claim 41.

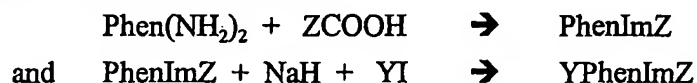
47. (new) The product of claim 46 which is a flat panel display device.

48. (new) The product of claim 46 which is a luminescent probe.

49. (new) An electroluminescent device for use with an applied voltage, comprising:
a first electrode,
an emitter which is an electroluminescent compound as claimed in claim 41, and
a second, transparent electrode,
wherein voltage is applied to the two electrodes to produce an electric field across the emitter so that the emitter electroluminesces.

50. (new) An electroluminescent device for use with an applied voltage, comprising:
 a first electrode,
 a second, transparent electrode,
 an electron transport layer adjacent the first electrode,
 a hole transport layer adjacent the second electrode, and
 an emitter which is an electroluminescent compound as claimed in claim 41 interposed between the electron transport layer and the hole transport layer,
 wherein voltage is applied to the two electrodes to produce an electric field across the emitter so that the emitter electroluminesces.

51. (new) A method of synthesizing a compound as claimed in claim 40 comprising at least one step selected from the group consisting of:



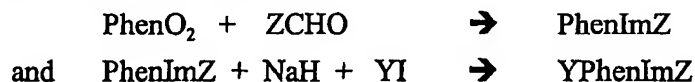
wherein PhenIm is imidazo[4,5-f]-1,10]phenanthroline;

Y is selected from the group consisting of hydrogen, substituted or unsubstituted aryl group, and substituted or unsubstituted aliphatic group having 1-24 carbon atoms which may be straight, branched or cyclic;

Z is selected from the group consisting of phenyl, biphenyl, naphthyl, anthryl, phenanthryl, pyrenyl,[[,]] pyridyl, bipyridyl, indyl, and quinoliny]; and

wherein a said substituent is not further substituted and is selected from the group consisting of an aryl group, an alkoxy group, a hydroxy group, a halo group, an amino group, a nitro group, a nitrile group, -CF₃ and an aliphatic group having 1-24 carbon atoms which may be straight, branched or cyclic.

52. (new) A method of synthesizing a compound as claimed in claim 40 comprising at least one step selected from the group consisting of:



wherein PhenIm is imidazo[4,5-f]-1,10]phenanthroline;

Y is selected from the group consisting of hydrogen, substituted or unsubstituted aryl group, and substituted or unsubstituted aliphatic group having 1-24 carbon atoms which may be straight, branched or cyclic;

Z is selected from the group consisting of phenyl, biphenyl, naphthyl, anthryl,

phenanthryl, and pyrenyl; and

wherein a said substituent is not further substituted and is selected from the group consisting of an aryl group, an alkoxy group, a hydroxy group, a halo group, an amino group, a nitro group, a nitrile group, $-CF_3$, and an aliphatic group having 1-24 carbon atoms which may be straight, branched or cyclic.